# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

## MEMORANDUM

DATE:

November 14, 2011

TO:

Chris Lanane, Dan Johnson

FROM:

Mike Horn/

SUBJECT:

Quality Assurance Audit Report

Attached is the draft version of the document, "Great Basin Unified Air Pollution Control District Quality Assurance Audit Report, Olancha, November 14, 2011," for your review. Please refer any comments you may have on the document to me by January 16, 2012. If no comments are received by that date, the report will be considered final.

Thank you for your cooperation in this matter.

# Great Basin Unified Air Pollution Control District Quality Assurance Audit Report

# SITE: OLANCHA

Report Date: November 14, 2011 Prepared by: Mike S. Horn

### 1.0 Introduction

As part of the Great Basin Unified Air Pollution Control District's (District) quality assurance (QA) program, periodic audits are conducted on the monitoring stations throughout the District. These checks, which are conducted by personnel other than those associated with the day-to-day operation and maintenance of the stations, provide additional assurance that the data collected are of high quality and meet the project objectives. The achievement of these objectives can be determined, in part, by establishing criteria within which monitoring equipment is to be operated and then testing that equipment regularly to verify its operation within those criteria.

In keeping with the District's QA program goals, the T.E.O.M. PM-10 Monitoring Station at Olancha was audited on November 14, 2011. The audit was conducted by Mike Horn and was witnessed by Scott Weaver who is the temporary site operator.

### 2.0 Parameters Audited:

### T.E.O.M. PM-10

### 3.0 Results and Actions

The results of the audit are summarized below. Any problems found are addressed under the heading, "Action," and are given below. Sensor responses not specifically addressed below responded within the audit criteria limits. The audit data are presented in detail in Appendix A. The certifications of the audit devices are presented in Appendix B. Audit criteria based on Title 40 code of Federal Regulations Part 58, Appendix A (October 2006), the USEPA Quality Assurance Handbook for Air Pollution Measurement Systems Volumes II, 1997, and IV, 2007, and/ or on the manufactures recommendations, are presented in table A-1.

#### 4.0 Recommendations and Comments

There are no recommendations or comments at this time.

APPENDIX A

# Great Basin Unified Air Pollution Control District Tapered Element Oscillating Microbalance (TEOM) ${\bf AUDIT}$

Date of report:	11/14/11					
Date:	11/14/11			Site name:	Olancha	
Start:	12:20hrs. PS	ST		Operator:	Dan Johnson	
Finish:	12:40hrs. PS	ST		Project:	SB 270	
Audited By:	Mike Horn			Site Elevation:	3680 f	t.
Witness:	Scott Weaver			Amb. Pres.:	886.10 H	ıPa
				Amb. Temp.:	16.1 d	leg. C
Prop. or Serial No.:	596			Make:	R & P	
Туре:	PM-10			Model:	1400ab	
				Last cal. date:	9/7/11	
	AUD	IT DEVICE(S)				
Make: I	BGI Incorporated			Make:	BGI Incorporated	
Model: I	DELTA CAL			Model:	DELTA CAL	
S/N:	525			S/N:	123	
Range:	2 - 20 lp	m		Range:	2 - 20 1	pm
_(	Calibration Factors				Calibration Factors	
Slope:	1.00			Slope:	1.00	
Intercept:	0.00			Intercept:	0.00	
Cal date:	12/22/10 D	ate of first use	1/12/11	Cal Date:	12/22/10	
	Main:	Aux:	Sampler temp:	Diff.	Sampler press:	Diff.
Leak check:	0.070	0.260	15.6	-0.5	879.28	-6.8
Dark current:	N/A	N/A				
(	Qa=[dPxTa/Pa] <sup>1/2</sup> +b	)	Site		Nominal I	Flow Rates
Audit	Audit Flov	v Rate,	Flow Rate	Diff.	Lower Limit	Upper Limit
Point	ΔP, in. H2O	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)
Total Flow Rate	16.57	16.57	16.63	0.4	15.0	18.4
Bypass/Aux Flow Rate	13.53	13.53	13.64	0.8		
Main Flow Rate	3.00	3.00	2.99	-0.3	2.7	3.3
<b>Total Flow Rate</b>	16.58	16.58	16.63	0.3	15.0	18.4

Comments: None.

# TABLE A-1

# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE PERFORMANCE AUDIT CRITERIA

<u>Measureme</u>	nt Variable	Evaluation Criteria
Wind Speed		At ws ≤ 5 m/s, input ± 0.25 m/s; At ws > 5 m/s, input ± 5% Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor and NRG Max 40H
Wind Direct	ion	input ± 5° Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor
Temperatur	re	input $\pm$ 0.5° C Gravimetry Lab $\pm$ 1.0 deg. C input $\pm$ 2.0° C for PM-10, PM-2.5 samplers
Relative Hu	midity	Ambient: input $\pm$ 5% RH, $\pm$ 1.5°C as dew point Gravimetry Lab: input $\pm$ 5%
Precipitation	ı	input $\pm 10\%$
Barometric	Pressure	Ambient: input $\pm$ 10 hPa TEOM: $\pm$ 10 mm mercury
PM-10: Hi-Y PM-2.5	Vol SSI, Partisol, BGI,	input $\pm$ 10%; Design Flow $\pm$ 10% input $\pm$ 4%; Design Flow $\pm$ 5%
TEOM:	Total Flow Main Flow Bypass Flow	input $\pm$ 10%; Design Flow $\pm$ 10% input $\pm$ 10%; Design Flow $\pm$ 10% input $\pm$ 10%; Design Flow $\pm$ 10%
TEOM:	Leak Check	Main Flow: < 0.15 LPM

Bypass Flow: < 0.60 LPM

# Appendix B

# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE CERTIFICATIONS OF AUDIT DEVICES

### AUDIT DEVICE

	Serial #	Cal Date:	Slope:	Intercept:
BGI Delta CAL:	123	1/24/11	1.0	0.0
BGI Delta CAL:	525	1/4/11	1.0	0.0
Testo 735-1	01467895/712	12/16/10	1.0006	0.0209
Barigo Altimeter/Barometer:	P9	12/17/10	1.0	0.0
RM Young wind speed motor:	CU10, HS10	8/30/11	N/A	N/A
Psychro-Dyne Psychrometer:	RH 04	N/A	1	1 0
Texas Electronics FC-525 Precipitation:	52202	N/A		
Chinook Eng. Streamline FTS	108	9/8/10	0.41	0.6

	Ta	apered	Element Oscil	lating Microba	lance (TEOM)		
				W AUDIT		HITCHIO CONTRA	to a level of E. H.
		T	· [		1		T T
	. 1		<del> </del>			1	<del></del>
Date:	11/14/11			Site Name:	1000	hnsa	
Start:		PST			Gung	ng.	<del></del>
Finish:	161	PST		Deciset:	SB270	ma	
Tillisti.	12:40	PSI		Project	SB270 V	CONTRACTOR AND ADDRESS OF TAXABLE PARTY.	L L.
				Site Elevation:		ft	
				Amb. Press.:	(1 0 (2 ))	in. Hg	
******				Amb. Temp.:	16.	deg. C	
					•		1
Prop. Or Ser. No.:				Make:	R&P		
Type:	PM10			Model:	1400a		
		62	1	Last Cal. Date:			
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woder:	DELTA CAL			Model:	DEL TA CAL		
S/N:	Maladariti	5		S/N:	0123		
Kange:	2 - 20	Tpm		Range:	2 - 20	lpm	
Calibration factors:			Calibr	ration factors:			
Slope:	1.0	, , , , , ,		Slope:	1.0		
Int.:	0,01			Int.:			
Cal Date:	1/4/11	E7****		Cal Date:	0.0		
	- self life to			Jui Date.			
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				A			!
Leak Check-Initial	Main:	.07	Aux:	.26			1
Leak Check-Final	Main:		Aux:				
		1000	Site		Nominal F	ow Rates	
Audit	Audit Flow	Rate	Flow Rate	Diff.	Lower Limit		
Point		(VLPM)	(VLPM)	(%)	(LPM)	(LPM)	
Total Fow Rate	11 57						
Aux. Flow Rate	19.5%		177/12	64- 16.6	7 15.0	18.4	
	13.03		12.64				
Main Flow Rate	3,000		2.77		2.7	3.3	
Total Flow Rate	16.00		16.63		15.0	18.4	
			Stand	dard			
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## GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

### MEMORANDUM

DATE:

July 20, 2011

TO:

Chris Lanane, Dan Johnson

FROM:

Mike Horn

SUBJECT:

Quality Assurance Audit Report

Attached is the draft version of the document, "Great Basin Unified Air Pollution Control District Quality Assurance Audit Report, Olancha, July 20, 2011," for your review. Please refer any comments you may have on the document to me by September 20, 2011. If no comments are received by that date, the report will be considered final.

Thank you for your cooperation in this matter.

# Great Basin Unified Air Pollution Control District Quality Assurance Audit Report

# SITE: OLANCHA

Report Date: July 20, 2011 Prepared by: Mike S. Horn

### 1.0 Introduction

As part of the Great Basin Unified Air Pollution Control District's (District) quality assurance (QA) program, periodic audits are conducted on the monitoring stations throughout the District. These checks, which are conducted by personnel other than those associated with the day-to-day operation and maintenance of the stations, provide additional assurance that the data collected are of high quality and meet the project objectives. The achievement of these objectives can be determined, in part, by establishing criteria within which monitoring equipment is to be operated and then testing that equipment regularly to verify its operation within those criteria.

In keeping with the District's QA program goals, the T.E.O.M. PM-10 Monitoring Station at Olancha was audited on July 20, 2011. The audit was conducted by Mike Horn and was witnessed by Scott Weaver who is the temporary site operator.

### 2.0 Parameters Audited:

#### T.E.O.M. PM-10

## 3.0 Results and Actions

The results of the audit are summarized below. Any problems found are addressed under the heading, "Action," and are given below. Sensor responses not specifically addressed below responded within the audit criteria limits. The audit data are presented in detail in Appendix A. The certifications of the audit devices are presented in Appendix B. Audit criteria based on Title 40 code of Federal Regulations Part 58, Appendix A (October 2006), the USEPA Quality Assurance Handbook for Air Pollution Measurement Systems Volumes II, 1997, and IV, 2007, and/ or on the manufactures recommendations, are presented in table A-1.

## 4.0 Recommendations and Comments

There are no recommendations or comments at this time.

APPENDIX A

# Great Basin Unified Air Pollution Control District Tapered Element Oscillating Microbalance (TEOM) AUDIT

Date of report:	7/20/11					
Date:	7/20/11			Site name: C		
Start:	12:15hrs. <b>PS</b>	Γ		Operator: [	Dan Johnson	
Finish:	12:35hrs. <b>PS</b>	Γ		Project: S	B 270	
Audited By:	Mike Horn			Site Elevation:	3680 ft.	
Witness:	Scott Weaver			Amb. Pres.:	887.70 hP	a
				Amb. Temp.:	34.2 de	g. C
Prop. or Serial No.:	596			Make:	R & P	
Туре:	PM-10			Model:	1400ab	
71				Last cal. date:	5/24/11	
	AUDI	T DEVICE(S)				
Make:	BGI Incorporated			Make: I	3GI Incorporated	
	DELTA CAL			Model: I	DELTA CAL	
S/N:	525			S/N:	123	
Range:	2 - 20 lpr	n		Range:	2 - 20 lpr	m
•	Calibration Factors				Calibration Factors	
Slope:	1.00			Slope:	1.00	
Intercept:	0.00			Intercept:	0.00	
Cal date:	12/22/10 Da	te of first use 1	1/12/11	Cal Date:	12/22/10	
	Main:	Aux:	Sampler temp:	Diff.	Sampler press:	Diff.
Leak check:	0.070	0.250	33.3	-0.9	888.40	0.7
Dark current:	N/A	N/A				
	$Qa = [dPxTa/Pa]^{1/2} + b$	·	Site		Nominal Fl	ow Rates
Audit	Audit Flow	Rate,	Flow Rate	Diff.	Lower Limit	Upper Limit
Point	ΔP, in. H2O	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)
Total Flow Rate	16.71	16.71	16.63	-0.5	15.0	18.4
Bypass/Aux Flow Rate	13.68	13.68	13.64	-0.3		
Main Flow Rate	3.04	3.04	2.99	-1.6	2.7	3.3
Total Flow Rate	16.69	16.69	16.63	-0.4	15.0	18.4

Comments: None.

# TABLE A-1

# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE PERFORMANCE AUDIT CRITERIA

Measureme	nt Variable	Evaluation Criteria
Wind Speed		At ws ≤ 5 m/s, input ± 0.25 m/s; At ws > 5 m/s, input ± 5% Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor and NRG Max 40H
Wind Direct	ion	input ± 5° Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor
Temperatur	e	input $\pm$ 0.5° C input $\pm$ 2.0° C for PM-10, PM-2.5 samplers
Relative Hu	midity	Ambient: input $\pm$ 5% RH, $\pm$ 1.5°C as dew point Gravimetry Lab: input $\pm$ 5%
Precipitation	ı	input ± 10%
Barometric	Pressure	Ambient: input ± 10 hPa TEOM: ± 10 mm mercury
PM-10: Hi-Y PM-2.5	Vol SSI, Partisol, BGI,	input $\pm$ 10%; Design Flow $\pm$ 10% input $\pm$ 4%; Design Flow $\pm$ 5%
TEOM:	Total Flow Main Flow Bypass Flow	input $\pm$ 10%; Design Flow $\pm$ 10% input $\pm$ 10%; Design Flow $\pm$ 10% input $\pm$ 10%; Design Flow $\pm$ 10%
TEOM:	Leak Check	Main Flow: < 0.15 LPM Bypass Flow: < 0.60 LPM

# Appendix B

# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE CERTIFICATIONS OF AUDIT DEVICES

### **AUDIT DEVICE**

	Serial #	Cal Date:	Slope:	Intercept:
BGI Delta CAL:	123	1/24/11	1.0	0.0
BGI Delta CAL:	525	1/4/11	1.0	0.0
Testo 735-1	01467895/712	12/16/10	1.0006	0.0209
Barigo Altimeter/Barometer:	P9	12/17/10	1.0	0.0
RM Young wind speed motor:	CUO1, HSO1	12/3/10	N/A	N/A
Cole-Parmer 3312-40 Psychrometer:	RH 03	12/10/04	Wet 1.0037 Dry 1.0059	Wet -0.0598 Dry -0.1518
Texas Electronics FC-525 Precipitation:	52202	N/A		
Chinook Eng. Streamline FTS	108	9/8/10	0.41	0.6

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Finish:	14 / /	PST	<del> </del>		SB270	show	
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						in. Hg	
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type.	PIVITO	-			1400a		
				Last Cal. Date:	5/24/11		
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			Device(s)	ļ	l		
wake:	BGI INCOR	PORAT	ĘD	Make:	BGI INCOM	RPORATED	
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5/N:	0123 5	15		S/N:	0123		
Range:	2 - 20	lpm		Range:	2 - 20	lpm	
Calibration factors:			Calib	ration factors:			
Slope:	1.0			Slope:	1.0		
Int.:	0,0			Int.:	0.0		
Cal Date:	1/4/11			Cal Date:			
Q <sub>a</sub> =m[d	IPxT <sub>a</sub> /P <sub>a</sub> J <sup>1/2</sup> +b		Altitude Corr	ection Factor:	-1013		
Leak Check-Initial	Main:	.07	Aux:	, 25			
Leak Check-Final	Main:		Aux:				- William -
			Site		Nominal F	low Rates	
Audit	Audit Flow	Rate	Flow Rate	Diff.	Lower Limit		
Point	delta P	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)	
Total Fow Rate	16.71		299113	64=16.	6 315.0	18.4	
Aux. Flow Rate	13.68.		13 6/11		100000		
Main Flow Rate	3 08		2.97		2.7	3.3	
Total Flow Rate	14.69		16-63		15.0	18.4	
	14.20		-76.56.7				
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Amb Temp	33 3			34.2			
Amb Press	877		888.40	887.7			
			000.40	001/			
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Comments:							
	-						
Calibrated By:	mil	7					

# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

### MEMORANDUM

DATE: April 21, 2011

TO: Chris Lanane, Dan Johnson

FROM: Mike Horn

SUBJECT: Quality Assurance Audit Report

Attached is the draft version of the document, "Great Basin Unified Air Pollution Control District Quality Assurance Audit Report, Olancha, April 21, 2011," for your review. Please refer any comments you may have on the document to me by June 21, 2011. If no comments are received by that date, the report will be considered final.

Thank you for your cooperation in this matter.

# Great Basin Unified Air Pollution Control District Quality Assurance Audit Report

# SITE: OLANCHA

Report Date: April 21, 2011 Prepared by: Mike S. Horn

### 1.0 Introduction

As part of the Great Basin Unified Air Pollution Control District's (District) quality assurance (QA) program, periodic audits are conducted on the monitoring stations throughout the District. These checks, which are conducted by personnel other than those associated with the day-to-day operation and maintenance of the stations, provide additional assurance that the data collected are of high quality and meet the project objectives. The achievement of these objectives can be determined, in part, by establishing criteria within which monitoring equipment is to be operated and then testing that equipment regularly to verify its operation within those criteria.

In keeping with the District's QA program goals, the T.E.O.M. PM-10 Monitoring Station at Olancha was audited on April 20, 2011. The audit was conducted by Mike Horn and was witnessed by Scott Weaver who is the temporary site operator.

### 2.0 Parameters Audited:

### T.E.O.M. PM-10

#### 3.0 Results and Actions

The results of the audit are summarized below. Any problems found are addressed under the heading, "Action," and are given below. Sensor responses not specifically addressed below responded within the audit criteria limits. The audit data are presented in detail in Appendix A. The certifications of the audit devices are presented in Appendix B. Audit criteria based on Title 40 code of Federal Regulations Part 58, Appendix A (October 2006), the USEPA Quality Assurance Handbook for Air Pollution Measurement Systems Volumes II, 1997, and IV, 2007, and/ or on the manufactures recommendations, are presented in table A-1.

### 4.0 Recommendations and Comments

There are no recommendations or comments at this time.

APPENDIX A

# Great Basin Unified Air Pollution Control District Tapered Element Oscillating Microbalance (TEOM) AUDIT

Date of report:	4/21/11					
Date:	4/20/11			Site name: (	Olancha	
Start:	12:40hrs. PST			Operator: I	Dan Johnson	
Finish:	13:00hrs. PST			Project: S	SB 270	
Audited By:	Mike Horn			Site Elevation:	3680	ft.
Witness:	Scott Weaver			Amb. Pres.:	884.30	hPa
				Amb. Temp.:	23.1	deg. C
Prop. or Serial No.:	596			Make:	R & P	
Туре:	PM-10			Model:	1400ab	
71				Last cal. date:	3/31/11	
	AUDIT	DEVICE(S)				
Make: I	3GI Incorporated			Make: I	BGI Incorporated	
	DELTA CAL			Model: I	DELTA CAL	
S/N:	525			S/N:	123	
Range:	2 - 20 lpm			Range:	2 - 20	lpm
	Calibration Factors				Calibration Factor	'S
Slope:	1.00			Slope:	1.00	
Intercept:	0.00			Intercept:	0.00	
Cal date:	12/22/10 Dat	e of first use 1	1/12/11	Cal Date:	12/22/10	
	Main:	Aux:	Sampler temp:	Diff.	Sampler press:	Diff.
Leak check:	0.070	0.250	22.6	-0.5	885.35	1.1
Dark current:	N/A	N/A				
	$Qa = [dPxTa/Pa]^{1/2} + b$		Site		Nominal	Flow Rates
Audit	Audit Flow	Rate,	Flow Rate	Diff.	Lower Limit	Upper Limit
Point	ΔP, in. H2O	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)
Total Flow Rate	16.76	16.76	16.63	-0.8	15.0	18.4
Bypass/Aux Flow Rate	13.66	13.66	13.64	-0.1		
Main Flow Rate	3.04	3.04	2.99	-1.6	2.7	3.3
Total Flow Rate	16.74	16.74	16.63	-0.7	15.0	18.4
	5					

Comments: None.

### TABLE A-1

# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE PERFORMANCE AUDIT CRITERIA

Measurement Variable	Evaluation Criteria
----------------------	---------------------

Wind Speed At ws  $\leq 5$  m/s, input  $\pm 0.25$  m/s;

At ws > 5 m/s, input  $\pm$  5% Starting threshold: 0.5 m/s;

R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor and NRG Max 40H

Wind Direction input  $\pm 5^{\circ}$ 

Starting threshold: 0.5 m/s;

R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young

05103 Wind Monitor

Temperature input  $\pm 0.5^{\circ}$  C

input  $\pm$  2.0° C for PM-10, PM-2.5 samplers

Relative Humidity Ambient: input  $\pm 5\%$  RH,  $\pm 1.5$ °C as dew point

Gravimetry Lab: input  $\pm 5\%$ 

Precipitation input  $\pm 10\%$ 

Barometric Pressure Ambient: input  $\pm$  10 hPa

TEOM:  $\pm$  10 mm mercury

PM-10: Hi-Vol SSI, Partisol, BGI, input  $\pm$  10%; Design Flow  $\pm$  10%

PM-2.5 input  $\pm$  4%; Design Flow  $\pm$  5%

TEOM: Total Flow input  $\pm 10\%$ ; Design Flow  $\pm 10\%$ 

Main Flow input  $\pm$  10%; Design Flow  $\pm$  10% Bypass Flow input  $\pm$  10%; Design Flow  $\pm$  10%

TEOM: Leak Check Main Flow: < 0.15 LPM

Bypass Flow: < 0.60 LPM

# Appendix B

# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE CERTIFICATIONS OF AUDIT DEVICES

## **AUDIT DEVICE**

	Serial #	Cal Date:	Slope:	Intercept:
BGI Delta CAL:	123	1/24/11	1.0	0.0
BGI Delta CAL:	525	1/4/11	1.0	0.0
Testo 735-1	01467895/712	12/16/10	1.0006	0.0209
Barigo Altimeter/Barometer:	Р9	12/17/10	1.0	0.0
RM Young wind speed motor:	CUO1, HSO1	12/3/10	N/A	N/A
Cole-Parmer 3312-40 Psychrometer:	RH 03	12/10/04	Wet 1.0037 Dry 1.0059	Wet -0.0598 Dry -0.1518
Texas Electronics FC-525 Precipitation:	52202	N/A		
Chinook Eng. Streamline FTS	108	9/8/10	0.41	0.6

t) to the continue of				ir Pollution Co llating Microba			
		apereo		IIAUNG MICTODA IW AUDIT	llance (TEOM)	electricism as w	
	1	·	FLO	WAUDII	7		r
	<b> </b>		<b></b>	-		1	
Date	11/20 10	-		Site Name	· 10-11-	/	
Start		PST	-	Operator			
Finish		PST			SB270	la prisar	
	15.00	101	<del> </del>	Site Elevation		160	
	<del> </del>			Amb. Press.	Well A	ft	
	<del>                                     </del>					in. Hg	
			<del> </del>	Amb. Temp.	23.	deg. C	
Prop. Or Ser. No.:	-01	1	-	Make	Den		
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Model:	BGI INCOM	CPURAT	tυ	Model:		RPORATED	
S/N:		he	1		DILLER UNI		
Range:	Market	15	<del> </del>	S/N:	-U1C)		
Calibration factors:	2 - 20	Ipm	0-22	Range:	2 - 20	ipm	
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Q₂=m[c	IPxT <sub>e</sub> /P <sub>e</sub> ] <sup>1/2</sup> +b	ļ	Altitude Corn	ection Factor:	÷1013		
Leak Check-Initial							
Leak Check-Final	Main:	107	Aux:	125			
Leak Check-Final	Main:		Aux:				
Audit	Audit Flow	D-4:	Site		Nominal F	low Rates	
Point			Flow Rate	Diff.	Lower Limit		
	delta P	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)	
Total Fow Rate	19.16		2-99/13-6	4-16.6	15.0	18.4	
Aux. Flow Rate	13.66		13.64				
Main Flow Rate	13-04		2.99		2.7	3.3	
Total Flow Rate	16.19		16.63		15.0	18.4	
			2				
	Commit		Stan				
Amb Town	Sampler		True	Raw			
Amb Temp	22.6			23:1			
Amb Press	. 874		885.36	8843			
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Comments:	Scott Ac	16	m				
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# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

### MEMORANDUM

DATE:

January 14, 2011

TO:

Chris Lanane, Dan Johnson

FROM:

Mike Horn/

SUBJECT:

Quality Assurance Audit Report

Attached is the draft version of the document, "Great Basin Unified Air Pollution Control District Quality Assurance Audit Report, Olancha, January 14, 2011," for your review. Please refer any comments you may have on the document to me by March 14, 2011. If no comments are received by that date, the report will be considered final.

Thank you for your cooperation in this matter.

# Great Basin Unified Air Pollution Control District Quality Assurance Audit Report

# SITE: OLANCHA

Report Date: January 14, 2011 Prepared by: Mike S. Horn

### 1.0 Introduction

As part of the Great Basin Unified Air Pollution Control District's (District) quality assurance (QA) program, periodic audits are conducted on the monitoring stations throughout the District. These checks, which are conducted by personnel other than those associated with the day-to-day operation and maintenance of the stations, provide additional assurance that the data collected are of high quality and meet the project objectives. The achievement of these objectives can be determined, in part, by establishing criteria within which monitoring equipment is to be operated and then testing that equipment regularly to verify its operation within those criteria.

In keeping with the District's QA program goals, the T.E.O.M. PM-10 Monitoring Station at Olancha was audited on January 12, 2011. The audit was conducted by Mike Horn and was witnessed by Dan Johnson who is the site operator.

#### 2.0 Parameters Audited:

T.E.O.M. PM-10

#### 3.0 Results and Actions

The results of the audit are summarized below. Any problems found are addressed under the heading, "Action," and are given below. Sensor responses not specifically addressed below responded within the audit criteria limits. The audit data are presented in detail in Appendix A. The certifications of the audit devices are presented in Appendix B. Audit criteria based on Title 40 code of Federal Regulations Part 58, Appendix A (October 2006), the USEPA Quality Assurance Handbook for Air Pollution Measurement Systems Volumes II, 1997, and IV, 2007, and/ or on the manufactures recommendations, are presented in table A-1.

### 4.0 Recommendations and Comments

There are no recommendations or comments at this time.

APPENDIX A

# Great Basin Unified Air Pollution Control District Tapered Element Oscillating Microbalance (TEOM) AUDIT

Date of report:	1/14/11						
Date:	1/12/11			Site name:	Olancha		
Start:	12:30hrs. PS	T		Operator:	Dan Johnson		
Finish:	12:50hrs. PS	T		Project:	SB 270		
Audited By:	Mike Horn			Site Elevation:	3680	ft.	
Witness:	Dan Johnson			Amb. Pres.:	899.30	hPa	
				Amb. Temp.:	7.8	deg. C	
Prop. or Serial No.:	596			Make:	R & P		
Type:	PM-10			Model:	1400ab		
•				Last cal. date:	12/13/10		
	AUD	TT DEVICE(S)					
Make:	BGI Incorporated			Make:	e: BGI Incorporated		
Model:	DELTA CAL			Model:	DELTA CAL		
S/N:	525			S/N:	123		
Range:	2 - 20 lpr	m		Range:	2 - 20	lpm	
	Calibration Factors			· ·	Calibration Factor	'S	
Slope:	1.00			Slope:	1.00		
Intercept:	0.00			Intercept:	0.00		
Cal date:	12/22/10 Da	ite of first use 1	/12/11	Cal Date:	12/22/10		
	Main:	Aux:	Sampler temp:	Diff.	Sampler press:	Diff.	
Leak check:	0.060	0.240	7.4	-0.4	901.57	2.3	
Dark current:	N/A	N/A					
	$Qa=[dPxTa/Pa]^{1/2}+b$		Site		Nominal	Flow Rates	
Audit	Audit Flow Rate,		Flow Rate	Diff.	Lower Limit	Upper Limit	
Point	ΔP, in. H2O	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)	
Total Flow Rate	16.61	16.61	16.63	0.1	15.0	18.4	
Bypass/Aux Flow Rate	13.58	13.58	13.64	0.4			
Main Flow Rate	3.01	3.01	2.99	-0.7	2.7	3.3	
<b>Total Flow Rate</b>	16.59	16.59	16.63	0.2	15.0	18.4	

Comments: None.

# TABLE A-1

# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE PERFORMANCE AUDIT CRITERIA

Measuremen	<u>nt Variable</u>	Evaluation Criteria		
Wind Speed		At ws $\leq$ 5 m/s, input $\pm$ 0.25 m/s; At ws $>$ 5 m/s, input $\pm$ 5% Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor and NRG Max 40H		
Wind Direct	ion	input $\pm$ 5° Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor		
Temperature	e	input $\pm$ 0.5° C input $\pm$ 2.0° C for PM-10, PM-2.5 samplers		
Relative Hur	midity	Ambient: input $\pm$ 5% RH, $\pm$ 1.5°C as dew point Gravimetry Lab: input $\pm$ 5%		
Precipitation	1	input $\pm 10\%$		
Barometric Pressure		Ambient: input $\pm$ 10 hPa TEOM: $\pm$ 10 mm mercury		
PM-10: Hi-Vol SSI, Partisol, BGI, PM-2.5		input $\pm$ 10%; Design Flow $\pm$ 10% input $\pm$ 4%; Design Flow $\pm$ 5%		
TEOM:	Total Flow Main Flow Bypass Flow	input $\pm$ 10%; Design Flow $\pm$ 10% input $\pm$ 10%; Design Flow $\pm$ 10% input $\pm$ 10%; Design Flow $\pm$ 10%		
TEOM:	Leak Check	Main Flow: < 0.15 LPM Bypass Flow: < 0.60 LPM		

# Appendix B

# GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE CERTIFICATIONS OF AUDIT DEVICES

# AUDIT DEVICE

	Serial #	Cal Date:	Slope:	Intercept:
BGI Delta CAL: Date of first use 1/12/11	123	12/22/09	1.0	0.0
BGI Delta CAL:	525	1/4/11	1.0	0.0
Testo 735-1	01467895/712	12/16/10	1.0006	0.0209
Barigo Altimeter/Barometer:	P9	12/17/10	1.0	0.0
RM Young wind speed motor:	CUO1, HSO1	12/3/10	N/A	N/A
Cole-Parmer 3312-40 Psychrometer:	RH 03	12/10/04	Wet 1.0037 Dry 1.0059	Wet -0.0598 Dry -0.1518
Texas Electronics FC-525 Precipitation:	52202	N/A		

Date:		T	apered	<b>Element Oscil</b>	lating Microba	lance (TEOM)		
Start:   17.30   PST   Project   SB270							10 (0) (0) (0) (0) (0) (0) (0)	
Start:   17.30   PST   Project   SB270							1	T'
Start:   17.30   PST   Project   SB270							0	
State					Site Name	9 Lane	ha	
Project:   Ste Elevation:   Amb. Press.   \$9.9.3   in. Hg   deg. C	Start:	12:30	PST	134		Tom the		
Site Elevation:   Amb. Press.   \$79.3   in. Hg   deg. C	Finish:	12:50	PST			SB270	www	
Amb. Press.:   \$79.3   in. Hg   deg. C	III. PARAMENTAL PROPERTY CONTROL TO THE	12.0			Site Elevation		ft	+
Amb. Temp.:						A company of the contract of t	in Ha	
Prop. Or Ser. No.:				1				1
Type:   PM10				1		1.0	ucg. o	
Type:   PM10	Prop. Or Ser. No.:	596	1	1	Make	RAP		
Last Cal. Date:		PM10					<del> </del>	1
Make: BGI_INCORPORATED   Make: BGI_INCORPORATED				T				<del> </del>
Make: BGI INCORPORATED   Make: BGI INCORPORATED			1	<del> </del>	Total Sulo	12/13/10		1
Make:   BGI INCORPORATED   Make:   BGI INCORPORATED			Audit	Device(s)	<del>                                     </del>		ļ-	<del> </del>
Since   1   1   1   1   1   1   1   1   1	Make:	RCT THEOD	DODAT	rto	Maka	DOT THOSE	DOD ATTE	ļ
Since   1	Model	DEL TA CAL	RUKAL	<u>μ</u> υ		BET THEOL	KPUKATED	<del>  </del>
Range: 2 - 20   Ipm	S/M·	O122						
Calibration factors:   Calibration factors:   Slope:   1 . 0		M.L.	Imm					
Slope:   1	Calibration factors	Z - 20	ibin	<del></del>	Kange:	2 - 20	Ipm	
Int.:				Calibi				I
Cal Date:         D/22/69         Cal Date:           Q₃=m[dPxT₂/P₂] <sup>1/2</sup> +b         Altitude Correction Factor: → 1013           Leak Check-Initial         Main:         Job Aux:           Leak Check-Final         Main:         Aux:           Site         Nominal Flow Rates           Audit         Audit Flow Rate         Flow Rate           Point         delta P (VLPM)         (VLPM)         (VLPM)           Total Fow Rate         13.58         13.74         15.0         18.4           Aux. Flow Rate         13.58         13.74         15.0         18.4           Main Flow Rate         16.6         12.94         2.7         3.3           Total Flow Rate         16.59         16.63         15.0         18.4           Sampler         True         Raw           Amb Temp         7.4         2.8         2.8           Amb Press         890         901.57         897.3				ļ				
Capacitation   Cap		0,0 /	ļ			0.0		
Leak Check-Initial   Main:	Cal Date:	1/22/10	7	ļ	Cal Date:			
Leak Check-Initial   Main:								
Leak Check-Initial   Main:	Q <sub>a</sub> =m[d	PxT_/P_]""+b		Altitude Corre	ection Factor:	÷1013		
Site						4-3		
Leak Check-Final   Main:		Main:	106	Aux:	.24			
Audit	Leak Check-Final			Aux:	The second			
Audit	Ave Weste British Shire							
Audit				Site		Nominal F	ow Rates	
Point   delta P   (VLPM)   (VLPM)   (%)   (LPM)   (LPM)	Audit	Audit Flow	Rate	Flow Rate	Diff.	Lower Limit	Upper Limit	
Total Fow Rate	Point	delta P	(VLPM)	(VLPM)	(%)			
Aux. Flow Rate	Total Fow Rate	16.61	2	199/13				
Main Flow Rate 3.0 1.99 2.7 3.3  Total Flow Rate 16,59 16.63 15.0 18.4  Standard  Sampler True Raw  Amb Temp 7.4 2.8  Amb Press ,890 901.57 8793		1358		13/14	1 -16.6	10.0	10.4	
Total Flow Rate   16, 59   16.63   15.0   18.4    Standard   Sampler   True   Raw		301		199		27	33	
Standard Sampler True Raw Amb Temp 7. 4 Amb Press , 890 90/.57 8793	Total Flow Rate	11 59				The second secon		
Sampler True Raw  Amb Temp 7. 4		16,01				10.0	10.4	
Sampler True Raw  Amb Temp 7. 4			77.55	Stanc	dard			
Amb Press , 890 901.57 8793		Sampler						
Amb Press , 890 901.57 899.3	Amb Temp	7 4		1100	70			
		800		an m	0480			
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